

Table 1: Modifications to ESN Release. B RbRs

RBR_id	req_key	Rel	Req_Category	segment	req_type	s_verif_method	s_verif_stat	a_verif_method	a_verif_stat	CCR	text	interpretation text	clarification
ESN-0003#B	9033	<u>B0B1</u>	mission essential	CSMS	functional	analysis	un-verified	analysis	un-verified	97-0131A	The ESN shall enable researchers on existing networks (TCP/IP and GOSIP) to gain access to data and ECS services in a transparent manner to the underlying differences between the networks.	B: ASTER GDS interfaces to EDC DAAC only. All researchers gain access to data and ECS via NSI. ECS supports the SUITE TCP/IP protocol network. Note: Some European scientists with OSI based networks should be able to access ECS via the Internet.	<u>B0 does not support JPL and ORNL DAACs.</u>
ESN-0006#B	8535	<u>B0B1</u>	mission essential	CSMS	functional	analysis	un-verified	analysis	un-verified	96-1452A	ESN shall interface with NSI to reach all external non-ECS network-attached facilities and science users.	B: Science users, SCFs. ESN is considered to be ECS DAAC networks.	<u>B0 does not support JPL and ORNL DAACs.</u>
ESN-0010#B	9056	<u>B0B1</u>	mission essential	CSMS	security	test	un-verified	test	un-verified	97-0131A	ESN shall provide the following standard services: a. Data Transfer and Management Services b. Electronic Messaging Service c. Remote Terminal Service d. Process to Process Communication Service e. Directory and User Access Control Service f. Network Management		<u>B0 does not support JPL and ORNL DAACs.</u>

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											Service g. Network Security and Access Control Service h. Internetwork Interface Services i. Bulletin Board Service		
ESN-0070#B	9039	<u>B0B1</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall support the intrasite elements data flow requirements identified in this specification.	ESN supports non-DAAC component services or capabilities including GSFC, SMC, and EOC (FOS) connectivity. At GSFC the ESN intrasite communications include the SMC and EOC (FOS) for management data exchanges.	<u>B0 does not support JPL and ORNL DAACs.</u>
ESN-0080#B	9041	<u>B0B1</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall interface with EBnet for inter-site data transmission between ECS DAACs.	ESN is considered to be ECS DAAC networks.	<u>B0 does not support JPL and ORNL DAACs.</u>
ESN-0240#B	9042	<u>B0B1B</u>	mission essential	CSMS	functional	analysis	un-verified	analysis	un-verified	97-0131A	The ESN shall be extensible in its design to provide capability for growth and enhancement.	ESN is considered to be ECS DAAC networks.	<u>B0 does not support JPL and ORNL DAACs.</u> <u>B supports EOC/FOS connectivity</u>
ESN-	9034	<u>B0</u>	mission	CSMS	functional	test	un-	test	un-	97-		Management	

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0280#B			critical				verified		verified	0131A	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text	services are not provided for release B.	
ESN-0290#B	8733	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The file transfer and management service shall be available in interactive and non-interactive services.		
ESN-0300#B	8734	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The file transfer and management non-interactive services shall be able to be scheduled.		
ESN-0340#B	8735	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall interoperate and exchange messages and data with external SMTP and X.400 mail systems.		
ESN-0345#B	9043	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall be capable of transparently transmitting Multi-purpose Internet Mail Extensions (MIME) messages.		
ESN-0350#B	8737	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The Electronic Messaging Service, shall be capable of exchanging binary data.		
ESN-0370#B	9044	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall provide interactive virtual terminal services.		

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ESN-0450#B	8739	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide process-to-process communication service.		
ESN-0490#B	8740	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.		
ESN-0510#B	8741	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.		
ESN-0590#B	8742	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN Directory Service shall be protected by access control capabilities.		
ESN-0600#B	8743	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	96-1452A	The ESN Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.		
ESN-0610#B	9045	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively responsible for holding or retrieving all directory information which is needed by ECS.		

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ESN-0620#B	9035	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall include a network management function to monitor and control the ESN.	ESN is considered to be ECS site networks.	
ESN-0640#B	9036	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.	ESN is considered to be ECS site networks.	
ESN-0650#B	9046	<u>B0B1</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management		<u>B0 does not support JPL and ORNL DAAC.</u>
ESN-0690#B	8753	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall be capable of reconfiguration transparent to network users.		
ESN-0740#B	8755	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN network management service shall retrieve performance/fault data about ESN protocol stacks and equipment.		
ESN-0750#B	8757	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide statistical processing capabilities to allow extraction		

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											and tabulation of network performance data.		
ESN-0760#B	9047	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN report generation function shall provide, on an interactive and scheduled basis, accounting, network configuration, fault and performance management information.		
ESN-0770#B	7231	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-0970A	The ESN query capability shall generate ad hoc statistics and reports based on parameters entered.		
ESN-0780#B	8761	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The network elements including the Internet interfaces, shall have the capability to report, periodically and on an interactive basis , network statistics to the ESN network management function, including the following information: a. Network round trip delay b. Network reset and restart indications c. Outages and CRC errors d. Performance statistics		
ESN-0790#B	8762	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall include the following configuration management functions at a minimum: a. collect information describing the state of the		

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											network subsystem and its communications resources, b. exercise control over the configuration, parameters, and resources of the subsystem, and over the information collected, c. store the configuration information collected, and d. display the configuration information		
ESN-0800#B	6336	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified		The ESN shall be capable of displaying the local network configuration status related to each system locally, and for all systems at the SMC.	All applicable sites	
ESN-0810#B	8763	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	ESN shall provide the following fault management functions at a minimum: a. detect the occurrence of faults, b. control the collection of fault information, and c. diagnose the probable cause of a detected fault		
ESN-0815#B	8765	<u>B0</u>	mission essential	CSMS	functional	analysis	un-verified	analysis	un-verified	96-1452A	Network simulation and traffic modeling capability shall be provided to troubleshoot network problems and to use in network planning.		
ESN-0830#B	6342	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified		The ESN shall have the capability to detect and report communications related errors and events both locally and at		

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											the SMC.		
ESN-0840#B	8767	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall have error reporting, event logging and generation of alerts.		
ESN-0900#B	8769	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	Errors and events to be detected shall include at least: a. communications software version or configuration errors b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures		
ESN-0910#B	6346	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified		The ESN fault management shall provide the capability to perform the following functions, at a minimum, both locally and at the SMC: a. set, view, and change alert threshold values b. enable and disable alert notifications (alarms) within a system c. enable and disable event reports within a system d. manage error and event logging files		
ESN-0920#B	8772	<u>B0</u>	mission critical	CSMS	functional	inspection	un-verified	inspection	un-verified	96-1452A	The ESN shall provide a set of utilities to perform diagnostic and testing functions for purposes of fault isolation.		
ESN-	9037	<u>B0B1</u>	mission	CSMS	functional	test	un-	test	un-	97-	The ESN network		<u>B0 does not</u>

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1000#B			essential		operational		verified		verified	0131A	management function shall have the capability to build histories for different types of errors and events, and the capability to analyze errors and recommend corrective action wherever practical.		<p><u>support JPL and ORNL DAACs.</u></p> <p>Staff is to analyze and recommend corrective action.</p> <p>Future releases are to consider the automation of staff activities.</p>
ESN-1010#B	8774	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide, for selective use as a debugging aid, the capability to perform packet tracing of its supported protocols.		
ESN-1030#B	8776	<u>B0</u>	mission critical	CSMS	functional	demo	un-verified	demo	un-verified	96-1452A	The ESN shall perform periodic testing of alternate communication capabilities to verify that they are operational.		
ESN-1060#B	8777	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN performance management function shall provide the capability to evaluate the performance of ESN resources and interconnection activities.		
ESN-1065#B	8778	<u>B0</u>	mission fulfillment	CSMS	functional	analysis	un-verified	analysis	un-verified	96-1452A	The ESN performance		

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			nt								management function shall include trend analysis for prediction of loading and bottlenecks/delays.		
ESN-1070#B	8779	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide the capability to perform the following functions, at a minimum: a. generate/collect network statistics b. control collection/generation of network statistics c. store system statistics and statistical histories d. display the system statistics e. track end-to-end transaction performance		
ESN-1090#B	8782	<u>B0</u>	mission essential	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide the capability to control the communications performance parameters of the network.		
ESN-1140#B	9048	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN shall provide protocol translation, termination, bridging and routing.		
ESN-1170#B	8785	<u>B0</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall provide necessary translation within supported file transfer and e-mail services.		
ESN-1180#B	8786	<u>B0B1</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	96-1452A	The ESN shall interoperate with NSI to provide user access to ECS.		<u>B0 does not support JPL and ORNL DAACs.</u>

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ESN-1181#B	8787	<u>B0</u>	mission essential	CSMS	functional	demo	un-verified	demo	un-verified	96-1452A	The ESN shall provide an ECS Bulletin Board capability.		
ESN-1206#B	9049	<u>B0B1B</u>	mission critical	CSMS	functional	test	un-verified	test	un-verified	97-0131A	The ESN capacity and performance shall be consistent with the specified capacity and performance requirements of the ECS functions.		<u>B0 does not support JPL and ORNL DAACs.</u> <u>B supports EOC/FOS connectivity</u>
ESN-1207#B	8791	<u>B0B1B</u>	mission critical	CSMS	functional	analysis	un-verified	analysis	un-verified	96-1452A	The ESN capacity and performance shall be capable of expansion to be consistent with the specified capacity and performance growth requirements of the ECS elements and functions.		<u>B0 does not support JPL and ORNL DAACs.</u> <u>B supports EOC/FOS connectivity</u>
ESN-1330#B	9038	<u>B0</u>	N/A_procedural	N/A_procedural	procedural	analysis not verified by ECS	N/A_procedural	not verified by ECS	N/A_procedural	97-0131A	The ESN shall provide ISO/OSI data communications protocols and services specified in the GOSIP (see Figure 8-3) to external interfaces as required by the IRDs.	B: ASTER GDS interfaces to EDC DAAC only. ECS external interfaces do not require GOSIP. All ECS external interfaces support TCP/IP.	
ESN-1340#B	9050	<u>B0</u>	mission critical	CSMS	functional	analysis	un-verified	analysis	un-verified	97-0131A	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.		

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ESN-1350#B	9051	<u>B0</u>	mission critical	CSMS	security	analysis	un-verified	analysis	un-verified	97-0131A	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.	This requirement applies to any ECS-supplied LAN.	
ESN-1360#B	9384	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The ESN shall control access of processes and users through an authentication and authorization service that meets GNMP standards.		
ESN-1365#B	9052	<u>B0B1</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The ESN shall isolate FOS with secure interfaces.		<u>B0 does not support JPL and ORNL DAACs.</u>
ESN-1367#B	9053	<u>B</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	IST users not within FOS facilities shall communicate with secure interfaces only with the use of a data integrity service.		
ESN-1380#B	9054	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The ESN shall provide countermeasures for the following security threats related to data communications: a. modification of data (i.e., manipulation) while in transit over the network b. disclosure of authentication information		

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											c. degradation in network or processing resource performance through denial of service attack d. Impersonation of authentication credentials or authorization privileges.		
ESN-1400#B	9055	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	97-0131A	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control c. data integrity d. data confidentiality		
ESN-1430#B	8808	<u>B0</u>	mission critical	CSMS	security	test	un-verified	test	un-verified	96-1452A	The ESN shall provide the following security event functions: a. Event detection b. Event reporting c. Event logging		

Table 2: New link from ESN Rel. B to ISS L4 requirement

RbR-id	L4-id
<u>ESN-0003#B</u>	<u>C-ISS-20010</u>
<u>ESN-1365#B</u>	<u>C-ISS-20010</u>